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AUTHOR Fischer, Sara I.
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ABSTRACT

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Relationship Between Culture and Youngsters' Formation of Equivalences in Urban and Rural Argentina and in New York City

Sara I. Fischer

Department of Counseling, Psychology and Research in Education

Hofstra University

Running Head: CULTURE AND EQUIVALENCE FORMATION

111-50 75 Rd Forest Hills NY 11375 (718) 896 5007

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Abstract

This study analyzed the relationship between urban and rural cultures and subjects' selection of attributes and groupings in a task of equivalence formation. Participants were 236 subjects, ages 6, 12 and 17, from rural and urban Argentina and from New York City. Subjects were administered an Equivalence Task consisting of two arrays of stimuli. Rural youngsters used less functional attributes and superordinate groupings than urban younsgters, at all ages. The performance of the urban youngsters in both cultures is significantly different in some aspects of the task; yet, they are closer to each other than either one is to the rural Argentinians. It would appear that some cultural factors, such as patterns of communications between the adults and children in the rural community, and the amount of schooling, among others, may partially explain some of the differences in the performances of rural and urban subjects.

Relationship Between Culture and Youngsters' Formation of Equivalences in Urban and Rural Argentina and in New York City

When an individual responds to a set of discriminably different objects as belonging to the same class, we talk about an equivalence class (Bruner et al, 1966; Cole & Scribner, 1974; Rosch, 1973). Subjects involved in an equivalence formation task have to indicate how two or more items are alike. When investigating this classificatory behavior, the following may be observed: (a) the type of groupings formed when rendering the items equivalent, and (b) the attributes selected by the subject.

The selection of attributes and groupings by urban youngsters have been found to follow a developmental progression. Besides the age-related changes, Bruner (1966), Berry (1973), Dawson (1979) and Triandis (1975) assert that the categories selected by individuals to sort the surrounding world reflect their native culture. The environment, the availability or lack of extensive schooling, child-rearing practices, family interrelations and languages spoken may all contribute to possible differences in cognitive performance of youngsters from different cultures. Studies by Maccoby and Mondiano (1966), Greenfield, Reich and Olver (1966), Kellaghan (1968), and Lacey (1970) show that there are significant differences in the performance of subjects from different cultural backgrounds when classifying a set of stimuli.

The objective of this research was to study the relationship between the urban and rural cultural environments and the classificatory behavior observed in youngsters age 6, 12 and 17 from rural and urban Argentina and from New York City, when forming equivalences with a set of selected stimuli. The focus of the investigation was to determine whether or not there are differences in the performance of rural and urban Argentinian children. Questions were raised concerning the extent to which the performance of urban children from Argentina is similar to the performance of urban youngsters from New York City, and the degree to which rural and urban rural youngsters show the same developmental progression. These relations were to be investigated with regard to two classificatory behaviors: (1) attributes selected by youngsters when presented with equivalence tasks and asked how the items are similar, and (2) the type of groupings formed by the youngsters.

Four types of groupings and five types of attributes have been identified by Olver and Hornsby (1966), and also used by Maccoby and Mondiano(1966) and Greenfield et al(1966). The types of groupings are: superordinate, complexive, thematic and hyperordinate.

Superordinate groupings are constructed using some feature shared by all the items being classified. Its basis is one of genuine conceptual grouping.

Complexive groupings are subgroups of an entire array of

stimuli. Five types are identified: collections, edge matchings, association, multiple groupings and key rings.

Thematic groupings are based on how the items fit in a sentence, a story, or a theme.

Hyperordinate groupings result when subjects group diverse items without abstracting the proper attribute; e.g.: "These are all things."

The five categories of attributes are: perceptible, functional, nominal, affective, and by fiat.

Perceptible attributes can be intrinsic and extrinsic. Perceptible intrinsic attributes refer to the phenomenal qualities of an item, such as color, size, shape. Perceptible extrinsic attributes refer to the item's position in time or space.

Functional attributes refer to what the subject can do with the items, what can be done with them, and the use or function of the items. Functional attributes can be intrinsic and extrinsic. Intrinsic functional attributes refer to what the item can do by itself. Extrinsic functional attributes refer to what the subject can do with them or to them.

Affective attributes are the emotions and judgements that stimuli arouse in the subject.

Nominal attributes are names that already exist in the language; e.g.: given the items "banana and orange", the child responds that they are both fruits.

Fiat refers to the youngsters stating that the items are

alike, without giving any further information about the attributes, even when prodded; e.g.: "They are all just alike."

In studies of equivalence formation among urban subjects in Boston, Mass., Olver and Hornsby(1966) found that there is progression that goes from using perceptible attributes towards the use of functional attributes. Affective and nominal attributes are not placed clearly in this postulated progression. While at age 6 most of their subjects were using perceptible clues, towards the age of 11, over 75% of the subjects were well on the way towards functionalism and by 19, there were no traces of perceptible attributes in the responses. At the same time, there was a movement from complexive towards superordinate groupings. In other words, urban children showed growth by going from grouping complexively and using perceptible attributes towards grouping by superordination and attending to functional characteristics of the stimuli. It was further suggested that the use of functional attributes allows and/or indicates higher levels of abstraction while fostering superordination.

Studies by Maccoby and Mondiano (1966) among urban and rural Mexican children, and Greenfield, Reich and Olver (1966) among Eskimo children and Wolof children in Senegal (1966) suggest that the progression from concrete and context-bound thinking to abstract and rule-governed thinking does not seem to follow the same developmental pattern suggested by the urban subjects from Boston and Mexico. Maccoby and Mondiano found significant

differences in the pattern of growth of youngsters from rural and urban Mexico. While children from urban backgrounds showed characteristics similar to the youngsters in Boston, rural children did not. Subjects from the farming rural Mexican village attended to more and finer perceptible attributes and depended on complexive groupings at an age when subjects from urban settings appeared to be using functional attributes and superordinate goupings. Greenfield et. al, found similar results.

The present cross-cultural study was designed to provide additional data regarding differences between rural and urban subjects and between urban subjects from culturally different urban centers. Consequently, the verbal task of the Olver and Hornsby study was replicated in Argentina and in New York City. Argentina was selected for several reasons. First, it was a country where the language and the native culture were different from the Anglo-Saxon culture prevalent in the USA. In addition, the direct cultural contacts between Argentina and the United States were less common than those of the United States and Central America and the Caribbean. Lastly, historically, the urban and rural populations of Argentina were fundamentally dissimilar; thus, observed differences between rural and urban performance in the formation of equivalences could be maximized.

Buenos Aires, the capital of Argentina, was selected as the urban center for the study. The town of Zapala, in the province of Neuquén, was selected as the rural site. Buenos Aires is the

cultural, economic, social, and political center of the country, with the rest of the provinces lagging far behind. Government policies in the late 1880's encouraged large immigration movements from Europe, particularly from Spain and Italy. Immigrants settled in large urban centers, mostly in Buenos Aires and the surrounding areas. This concentration of Europeans in the large cities intensified the ethnographic, social, economic, educational and cultural differences between rural and urban Argentina. The rural areas remained sparsely populated with a larger proportion of Indian and Mestizo populations than can be found in the urban centers, particularly in Buenos Aires.

Method

Sample

Two hundred sixteen subjects comprised of 6-, 12- and 17-year-olds participated in the study. All participants were monolingual in their native language: Spanish in Argentina and English in New York City. Participants were recruited through elementary and secondary schools in the two cities, Buenos Aires and New York, and from elementary and evening schools in Zapala, a rural area of Argentina.

Seventy five children were from New York City, 25 in each age group. By virtue of the schools' proportion of free lunches and the parents' occupation, the sample could be considered blue-collar, middle class.

Seventy five children were from Buenos Aires, urban

Argentina, 25 in each age group. Given the type of private school attended and parents' occupation, the sample could be considered upper middle class.

Sixty six children were from the rural town of Zapala, in the province of Neuquén, Argentina. There were 25 6-year olds, 22 12-year olds, and 19 17-year old youngsters. By virtue of their parents' occupation and standard of living, the sample could be considered to be of low socioeconomic level.

The rural subjects came from recently relocated families from the surrounding rural areas of Zapala, mostly from the "Mapuche" tribe of indians who populate most of the rural areas of the province of Neuquén. The selection of students of age 12 and 17 in the town of Zapala presented some difficulties, as explained below.

The 12-year-old youngsters who were potentially eligible to participate in this study were children of families who recently had been relocated in the town of Zapala. In many instances, these youngsters had never attended school or they had done so irregularly. Consequently, the requirement of continuous school attendance since the age of 6, that had been applied to the urban samples, had to be modified to a minimum of three years of schooling. The sample included 22 students from grades 4,5 and 6, rather than 6th grade only, as in the urban samples.

Similar problems were encountered concerning past schooling and concentration of eligible 17 year-old students in one

particular grade. The sample had to be selected from evening schools where many rural youngsters complete their education or learn a trade. Only 19 rural students who were from rural areas outside of town and close to the target age of 17 years could be identified. They had various various degrees of schooling completed.

Equivalence Formation Task

Students were administered two Equivalence Tasks, the banana task and the bell task, individually by the investigator who is a Spanish-English bilingual individual and a native of Argentina. The two arrays were administered succesively, and randomly presented as first or second to control for task learning. The responses of the students were written verbatim, and the interviews were also taped. Rose Olver (1961) and Joan Hornsby (1962) originated the two tasks in their studies on equivalence formation with suburban students from an area near Boston, Massachussetts. It was later used by Nancy Mondiano and Michael Maccoby (1966) and by Greenfield et al (1966) in their study of equivalence formation in rural and urban Mexico and Anchorage, Alaska, respectively. The task is to find similarities and differences between a new stimulus item and all those that preceded it. The items were arranged in the following two arrays:

(1) "The banana task": banana, peach, potato, meat, milk, water, air, germs, and the contrasting item "stone".

(2) "The bell task": bell, horn, telephone, radio, newspaper, book, painting, education, and the contrasting item " confusion"

The words were printed on cards which were presented and read to the students according to the following procedure. The first pair of words was shown and the subject was asked to find similarities between the stimulus items. Subsequently one more word was added to the array of cards standing in view. The student was then asked to find differences between the last item presented and the ones that preceded it, and next to find similarities among all the stimulus items. Each new words was added sequentally, and the two questions were repeated. When the last word was presented, the student was only asked to find the difference between the last item and the rest of the array.

A translation into Spanish was prepared by the experimenter and was validated by bilingual, Spanish-English, individuals.

The validity and reliability of the tasks were established prior to this study (Fischer, 1984).

Results

Results Concerning the Hypotheses

The results of the banana and the bell tasks were analyzed separately and together. In scoring the responses it was observed that in some cases both arrays generated different types of responses that could be attributed not only to age and culture,

as hypothesized, but also to the content of the tasks.

The data were analized using the log linear model (Brown, 1981). The effectsof the hypothesized interactions are presented in Table 1.

Insert Table 1 about here

The effects of the grouping-age and the attribute-age interactions were significant ($p<.00001$). These results lent support to the predicted function of age concerning the use of superordinate groupings and functional attributes. In the three cultures the use of superordinate groupings and functional attributes increased with age. Nevertheless, the pattern of growth from age 12 to age 17 in the rural areas showed a marked difference from that observed in the urban areas. Rather than showing increasing growth, it remained almost unchanged. In addition, contrary to the theoretical prediction, the use of perceptible attributes and complexive groupings by rural subjects did not decrease with age.

Although there was an age function present in the data of the three cultural groups, the use of superordinate groupings and functional attributes differed in the three samples. As predicted in the hypothesis, rural subjects used significantly less functional attributes and less superordinate groupings than their urban counterparts.

It had been hypothesized that the 6-year-olds from rural and urban areas would not differ significantly, but that the greatest difference would be observed at ages 12 and 17 between the rural and the urban subjects. While the results confirmed the prediction at ages 12 and 17, they clearly indicated that the performance of the rural 6-year-olds was significantly different from the performance of the urban 6-year-olds. In this study, the 6-year-old children from the rural areas used about two third less superordiante groupings and functional attributes, and twice as many "I don't know-Not alike" answers than their urban counterparts.

It had been hypothesized that urban subjects from Buenos Aires and New York would select superordinate groupings and functional attributes with similar frequency. The testing of the hypotheses revealed that the attribute-culture and the grouping-culture interactions were significant. In other words, the performance of youngsters from Buenos Aires and from New York was not similar, except in the use of superordinate groupings in the banana task, when analyzing the tasks separately. This finding suggests that the content of the task affects the performance of the youngsters

Results Concerning Groupings

The urban students in this study showed a greater ability to deal with the equivalence formation task than the rural youngsters. The difference in performance among the rural and the

urban groups was greater at age 6 than at age 12 and at age 17. Furthermore, the 6-year-old children in the three cultures showed the greatest variability in performance between tasks. Considering the superordinate groupings as a measure of task success, the rural 6-year-olds were more successful in dealing with the bell task than with the banana task. Contrary to this pattern, the urban 6-year-olds showed more success in the banana task than in the bell task.

The sum of the superordinate, complexive and hyperordinate categories is an indication of the equivalences that the students attempted to form. Of the total number of responses in the rural group, the formed equivalences comprised 38 percent at age 6, 67 percent at age 12 and 70 percent at age 17 (Table 2). Comparing these figures with the formation of equivalences in the urban groups, it is evident that the urban students were able to deal with the task more succesfully, as far as forming equivalences with all or some of the items. The difference among the rural and urban groups was even greater when focusing in the superordinate category, which is comprised of the equivalences that include all the items in the banana and bell arrays.

Insert Table 2 about here

In the urban samples, the use of superordinate groupings increased with age while in the rural sample it increased from age

6 to age 12, but not from age 12 to age 17. There was a decrease in the use of complexive groupings in the urban samples in both tasks. Contrary to this pattern, the use of complexive groupings by the rural sample in the bell task showed a clear increase while in the banana task the proportion of complexive groupings remained stable across ages. This difference reinforces the suggestion that the content of the task affects the responses elicited from the participants.

When youngsters use all the items in the array to form a complexive grouping, the grouping is called "complexive without remainder"; when youngsters exclude some items in the array, the grouping is called "complexive with remainder." The rural youngsters relied heavily on complexive groupings with remainder. When the complexity of the stimuli prevented the 12- and the 17-year-old youngsters from using superordination, they tended to select one pair of items, excluding the rest of the items in the set, more often that their urban counterparts did. Pairing stimuli is a complexive grouping strategy mainly used by young children,e.g.: "Peach and potato are alike," "Newspaper and radio are alike.".

The 6-year-old rural children favored the use of pairs; 84 percent of the complexives in the banana task were pairs. Of the remaining complexive groupings, 10.71 percent were complexives without a remainder and the rest had a remainder. In the bell task, about 30 percent of the complexive groupings were pairs.

While the rural 12-year-olds still resorted to pairs of stimuli, they showed an increased ability to deal with all the items in the banana task since close to 30 percent of the complexive groupings had no remainder and only 35 percent were pairs. In the bell task, on the other hand, the pairs still comprized about 50 percent of the complexives, and only 9 percent of the complexives had no remainder. The "key-ring", a response type that according to Olver and Hornsby represents a more sophisticated form of complexive grouping, appeared at age 12, e.g.: "water is in peach, potato meat and milk." These key rings were mainly used in the presentation of the last stimuli. Another favored technique was that of multiple groupings mainly made of two groups, e.g.: "Peach and potato are round, and milk and meat are for dinner."

The 17 year-old rural youngsters showed a limited ability to deal with the increasing difficulty of the stimuli. In both tasks they resorted mostly to pairs (between 72 % to 64 % of the complexive groupings).

The urban youngsters from Buenos Aires and New York City showed the same type of patterns observed in the rural areas, regarding the type of complexive groupings used. At age 6, there was a tendency to rely heavily on forming pairs of items and complexive groupings with remainders in the form of multiple groupings or groups of three or four items. Key rings appeared mainly in dealing with the last item, e.g.: "Germs are in

peach,potato, meat, mi and air," and "There is education in radio, newspaper, books and paintings." As children got older, there was a lesser dependency on pairing of items, and when children could not form superordinate groupings they tended to rely on complexive groupings without remainder, mostly in the form of multiple groupings and key rings.

Contrary to what was observed in the 17-year-old rural group, the 17-year-old urban groups from Buenos Aires and New York City showed a limited use of pairs when relying on complexive groupings. The urban 17-year-olds used a smaller number of complexive groupings when compared to all the other youngsters, and when they did, the groups were mostly complexive groupings without remainder. At age 17, the key rings appeared as a response to the last presentation of the items.

Regarding the use of complexive groupings, the performance of the urban groups was consistent with the theory, but the performance of the rural groups was not. The increase in the use of complexive groupings as children got older observed in the rural sample would seem to suggest that rural children attempt to deal with equivalence formation by grouping complexively, rather than by superordination, as the 12- and 17-year old urban youngsters do. It was also found that when using complexive groupings, rural youngsters tended to rely on the less difficult forms: pairs of stimuli and groups with remainders. It has been also observed that the kind of stimuli used influences the pattern

of groupings generated by all the youngsters.

Results Concerning Attributes

The greatest increase in the use of functional attributes in the three cultures occured between age 6 and age 12 (the percentage of use at least doubled). Consistent with the trend observed in the use of superordinate groupings, the use of functional attributes in the rural sample increased from ages 6 to 12, but it remained almost unchanged from age 12 to age 17; as opposed to the urban sample, which also showed increase from age 12 to age 17.

Examining the type of functional attributes used helps explaining differences among the age groups. The category called "functional attribute" includes three types of characteristics relating to an item, according to the definitions proposed by the theory and studies reviewed: (1) Intrinsic functional, what the item can do by itself; e.g.: "The bell makes noise", "Bananas grow"; (2) Extrinsic functional, what the subject can do with the item; e.g.: "We read a book", "You can drink milk and water"; and (3) The "general" function or use of the item; e.g.: "Banana, peach , potato and meat satisfy your hunger", "Newspaper, radio and book communicate ideas."

According to the theory and studies reviewed, generally functional attributes are more abstract than intrinsically and extrinsically functional attributes. Intrinsic functional attributes refer to the concretness of the items,e.g.: "They

sound", "They grow". Extrinsic functional attributes are related to enactive representation since they refer to actions by the subject in relation to the item,e.g.: "I eat them", "You can read them." The function or use of an item, on the other hand, transcends the concreteness of the particular item and the personal relation of the subject to the stimulus. Table 3 shows the use of the three types of functional attributes by the three age groups.

Children at age 6 relied heavily on intrinsic and extrinsic functional attributes, between 60 to 100 percent of the functional attributes were in these categories (see Table 3). The generally-functional attributes were used minimally by the urban 6-year-olds, and not at all by the rural 6-year-olds.

While there was an increase in the use of functional attributes from age 12 to age 17, the most meaningful changes were the decrease in the use of extrinsic functional attributes, except in the rural sample in the ball task (Table 3).

Two major differences in the use of functional attributes were observed between the rural and urban subjects. The first difference was the frequency of use of functional attributes in both tasks; the second one was the emphasis on the "use or function" of the stimuli. Rural youngsters used functional attributes less frequently than urban youngsters. When using functional attributes, rural youngsters tended to use less generally-functional attributes than their urban counterparts.

This difference was more marked at age 6, since the 6-year-olds in the rural sample did not use generally-functional attributes in either task.

Regarding the use of perceptible attributes, the theory predicts a decrease in use as children get older. The performance of the youngsters in urban Buenos Aires conformed to the expected progression, but the performance in the rural areas and in New York City did not. The performance of the 6-year-olds from New York City deviated from the pattern predicted by the theory and from the pattern observed in the other samples; they used less perceptible attributes than any of the other children of the same age in the other cultures. They also used less perceptible attributes than the 12-year-olds from the same culture.

Regarding the kind of perceptible attributes used in the rural sample, shape appeared to be salient at all ages. In the banana task, the use of shape ranged from 56 percent at age 6, to 33 percent at age 17. In the bell task, shape and sound were the most salient perceptible attributes; each comprised approximately 28 percent of the perceptible attributes at all ages. Color was used minimally at all ages.

The use of nominal attributes provided the 6-year-olds from New York City a powerful alternative to form equivalences in the banana task. When the first two items, (banana and peach), were presented, 60 percent of the youngsters answered: "They are fruits." In urban Buenos Aires, only 32 percent of the youngsters

used that answer in the same presentation of stimuli while 44 percent used perceptible attributes, e.g.: "They have the same taste", "They are the same color", "They have a peel." In the second and third presentation of the stimuli, (banana, peach, potato; and banana, peach, potato, meat respectively), approximately 25 percent of the New York City children responded: "They are food", using a superordinate grouping strategy. Instead of using nominal attributes, those 6-year-olds from Buenos Aires who did not use functional attributes selected a perceptible attribute and formed the equivalence "peach and potato", based on shape.

Affective attributes also proved to be a useful basis of equivalence in the 6-year-old group from New York City. The affective responses were variations of the answer: "They are good for you." The New York City youngsters used them in 11 percent of the equivalences while the children from Buenos Aires used them minimally (.57%).

In several occasions, differences were found among groups that might be attributed to the content of the arrays. These findings are consistent with similar observations in the selection of groupings, which clearly suggest that the content of the stimuli affects the performance of the subjects.

The experience of the youngsters in their particular cultural environment affects their selection of attributes and the techniques observed for grouping stimuli. In the rural area where

this study took place, most families use powdered milk because refrigeration was not available. When the items water and milk were presented to the rural youngsters, a commonly used response was: "They are the same because water is used to make milk." Another example of the effect of training and experience in the process of equivalence formation are the answers elicited from urban youngsters in Buenos Aires and New York City. While in New York City, milk is commonly used as a drink for lunch and dinner, in Buenos Aires milk is used for shakes and for breakfast or afternoon snack; it would never be used during a main meal. Thus, when milk, meat and potato were presented to elicit an equivalence, many New York City youngsters found that: "Milk, meat and potato are the same because they are for dinner." Milk was never used in that context in the sample from Argentina.

Discussion

A major difference between the findings of this study and the other studies reviewed is that a significant difference has been found between the rural and the urban children at age 6. In fact, the greatest variability between ages was observed among the youngest children in this study. Some plausible explanations can be offered to account for this observed difference. Most of the socialization experiences of the rural children selected for this study are confined to exchanges with other children. Adult intervention is sparse. Verbal interaction between parents and children, and by extension between adults and children are rare.

According to Feuerstein's (1980) view, these youngsters would be considered "culturally deprived" because their mediated learning experiences are impoverished; that is, the contact with the adult community that transmits the culture is not fully developed given the present circumstances of the cultural environment.

Furthermore, Mapuche individuals show a slower language "tempo" than that observed in other members of the community. Mapuches are reticent individuals; they take a longer time than the average individual to answer questions, to initiate conversations and to maintain any type of verbal exchange (Lanigar, 1978). During the study, it was observed that the rural children took a longer time to answer than the urban children whether or not they "knew" the answer.

The results in this study suggest that certain tasks, such as the banana task, elicit an appreciable proportion of responses that cannot be appropriately interpreted without intervention from the experimenter. Such is the case with the nominal attributes. Without further questioning, it cannot be ascertained if the nominal attribute is used by the youngster "just as a label acquired by association" or as a formal conceptual class.

Similarly, the affective attributes tend to reflect a subjective evaluation or a moral and/or aesthetic standard in the community. For example, in the responses used by the New York City students regarding the foods presented in the banana item, the effect of the school training is recognizable, e.g.: "They are

good for you", "You have to eat them every day because they are good for your health." In the bell task, community standards are recognized in answers such as: "Education and books are good", and "Paintings and books are important."

Lastly, the results of this study suggest that the definition of the category "functional attribute", and by extension "functionalism", is overinclusive and thus somewhat misguiding. Functional attributes are defined as things that the item does by itself, things the subject can do with the item and uses or functions of the item. The category includes these three characteristics as if they belong to the same conceptual hierarchy, and as if they were in the same level of abstraction. These three characteristics of items are not in the same level of abstraction, as admitted by other experimenters in their discussions of their own findings (Maccoby and Mondiano, 1966; Greenfield, Reich & Olver, 1966). Furthermore, as was shown in this study there is a progression with increasing age from the intrinsic to the generally-functional attributes. Since the theoretical position of functionalism implies that the youngsters have reached a higher degree of abstract thinking, the inclusion of clues that are concrete in nature renders functionalism an unclear and ambiguous postulate.

It should be noted that since the 17 year-old sample from rural Argentina had some unusual characteristics described under the method section, the results regarding the rural sample are

inconclusive. It is not clear whether the trend implies that rural groups reach a plateau in cognitive development at about age 12, or whether the finding is attributable to the particular educational experience of this specific group of 17-year-olds.

The implications of the findings of this study for the education of the culturally different child are encouraging. The fact that rural children concentrate on different type of attributes to form equivalences points to the possibility that the meaning of words and the extension of concepts are somewhat different from those held by urban teachers and urban students. Therefore, teachers' assumptions about the knowledge held by rural students may be modified by the findings of this study. Awareness into the cognitive strategies used by rural children may help correct misinterpretations and improve teacher's attitudes as well as teaching strategies.

Lastly, the study suggests some research implications as well as cross-cultural research methodology. The tasks used to test equivalence formation should eliminate categories that defy interpretation without intervention. Verbal tasks, such as the ones used in this study, may be tested in the target cultures, prior to the research, in order to determine the association power of the items included in the array.

Table 1

Chi Square Partial Association of Effects

Effect	DF	Partial ChiSquare	Prob.
Combined Tasks by Three Cultures			
Grouping -Age	8	520.67	.0001
Attributes-Age	10	444.84	.00001
Grouping -Culture	8	554.41	.00001
Attribute-Culture	10	398.44	.00001
Group.-Age-Cult.	16	66.30	.0001
Attr.-Age-Cult.	20	63.21	.00001
Two Urban Cultures by Combined Tasks			
Grouping-Culture	4	23.21	.0001
Banana Task Only			
Grouping-Culture	4	3.70	.4482
Bell Task Only			
Grouping-Culture	4	23.22	.0001
Two Urban Groups by Combined Tasks			
Attribute-Culture	5	52.71	.00001
Tasks Combined by Three Cultures and 12-and 17-year-olds			
Grouping-Culture	8	434.35	.00001
Attribute-Culture	10	270.03	.00001

Table 2

Percentages of Formed Equivalences by Three Ages and Three Cultures with Banana and Bell Tasks Combined

	Age		
Culture	6yrs	12yrs	17yrs
Rural Ar.	38%	67%	70%
Urban Arg.	70%	88%	98%
Urban NY.	64%	91%	97%

Table 3

Use of Functional Attributes by Rural and Urban Youngsters Three Age Groups with Banana and Bell Tasks Percentage of Answers

Culture	Age	Task	Int.	Ext.	Gen.	Total Number
Rural	6	Banana	0	100%	0	16
Arg.		Bell	75%	25%	0	26
	12	Banana	0	74%	26%	47
		Bell	58%	16%	25%	59
	17	Banana	5%	55%	60%	40
		Bell	14%	29%	57%	55
Urban	6	Banana	0	60%	40%	42
Buenos		Bell	72%	15%	13%	59
Aires	12	Banana	0	62%	28%	108
		Bell	50%	14%	36%	110
	17	Banana	0	17%	83%	120
		Bell	37%	4%	59%	140
Urban	6	Banana	0	62%	38%	52
New		Bell	60%	40%	0	53
York	12	Banana	0	71%	29%	80
		Bell	43%	13%	44%	134
	17	Banana	0	45%	55%	98
		Bell	43%	4%	53%	149

Note. Int=Intrinsic. Ext=Extrinsic. Gen=Use or Function

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